RECLAMATION

Managing Water in the West

Bureau of Reclamation

GIS on Lake Mead

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U.S. Department of the Interior
Bureau of Reclamation

Area of Interest

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Photographic Library

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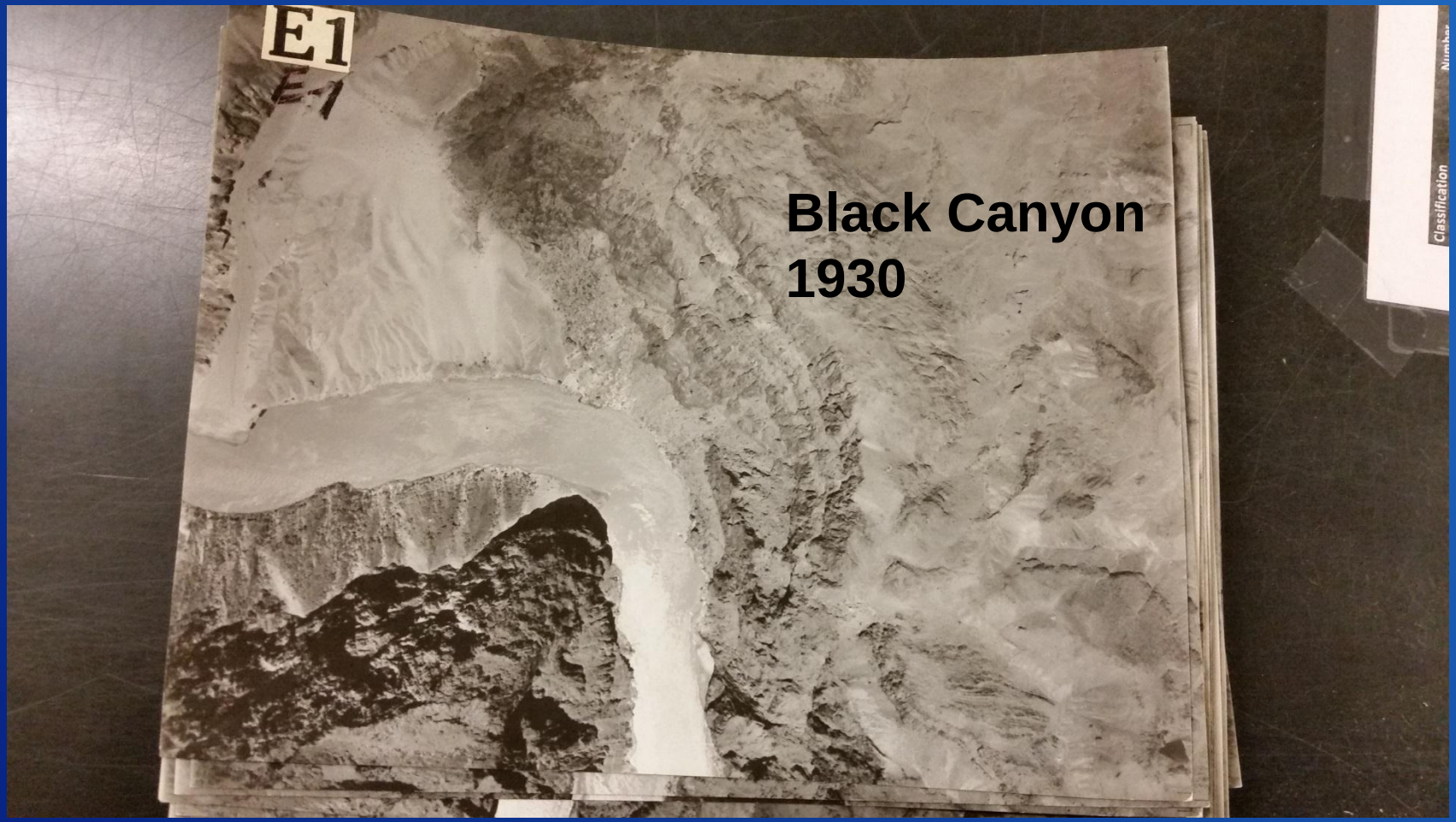
Photographic Library

1926 - present



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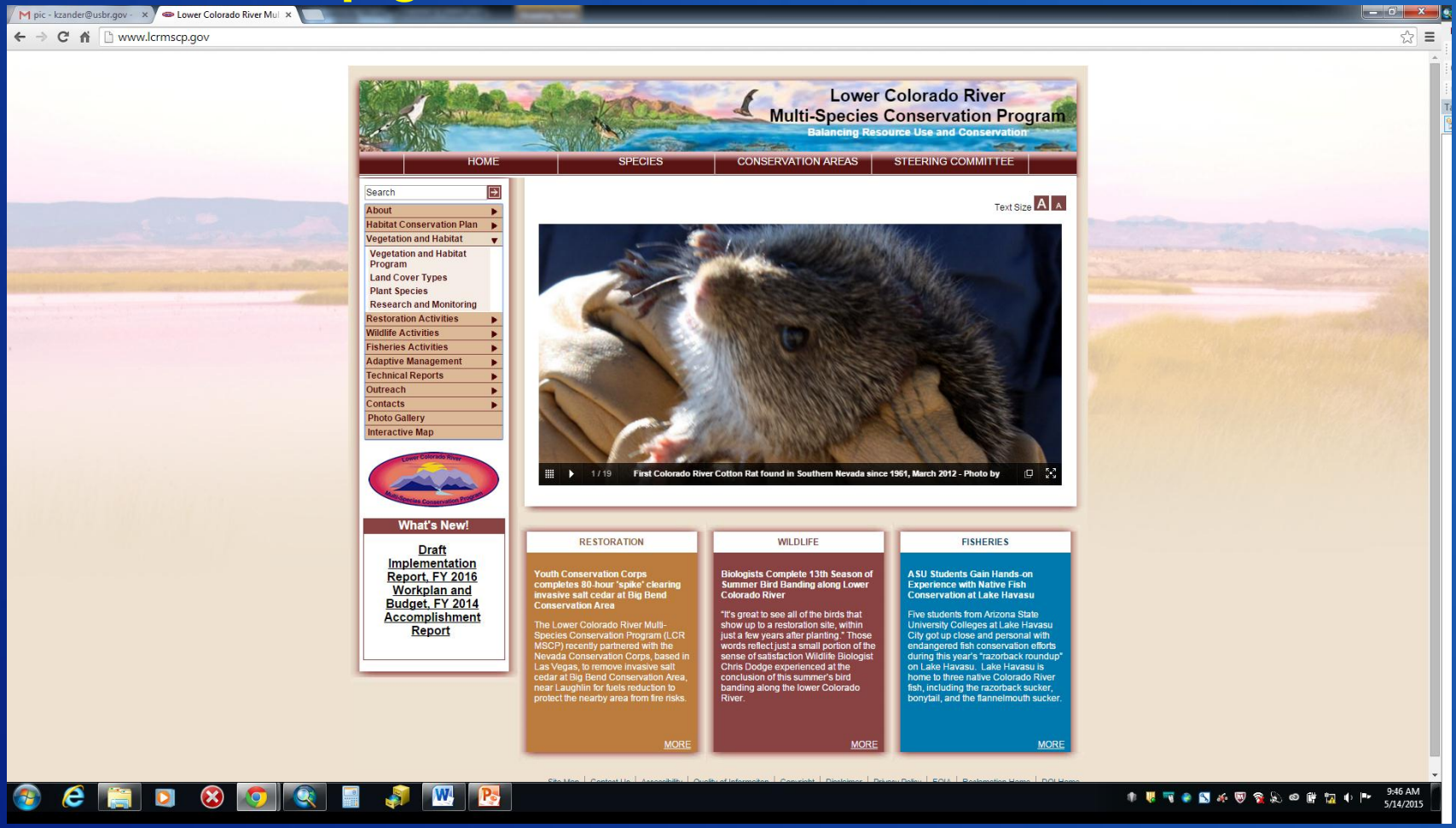
Multi Species Conservation Program

www.lcrmscp.gov



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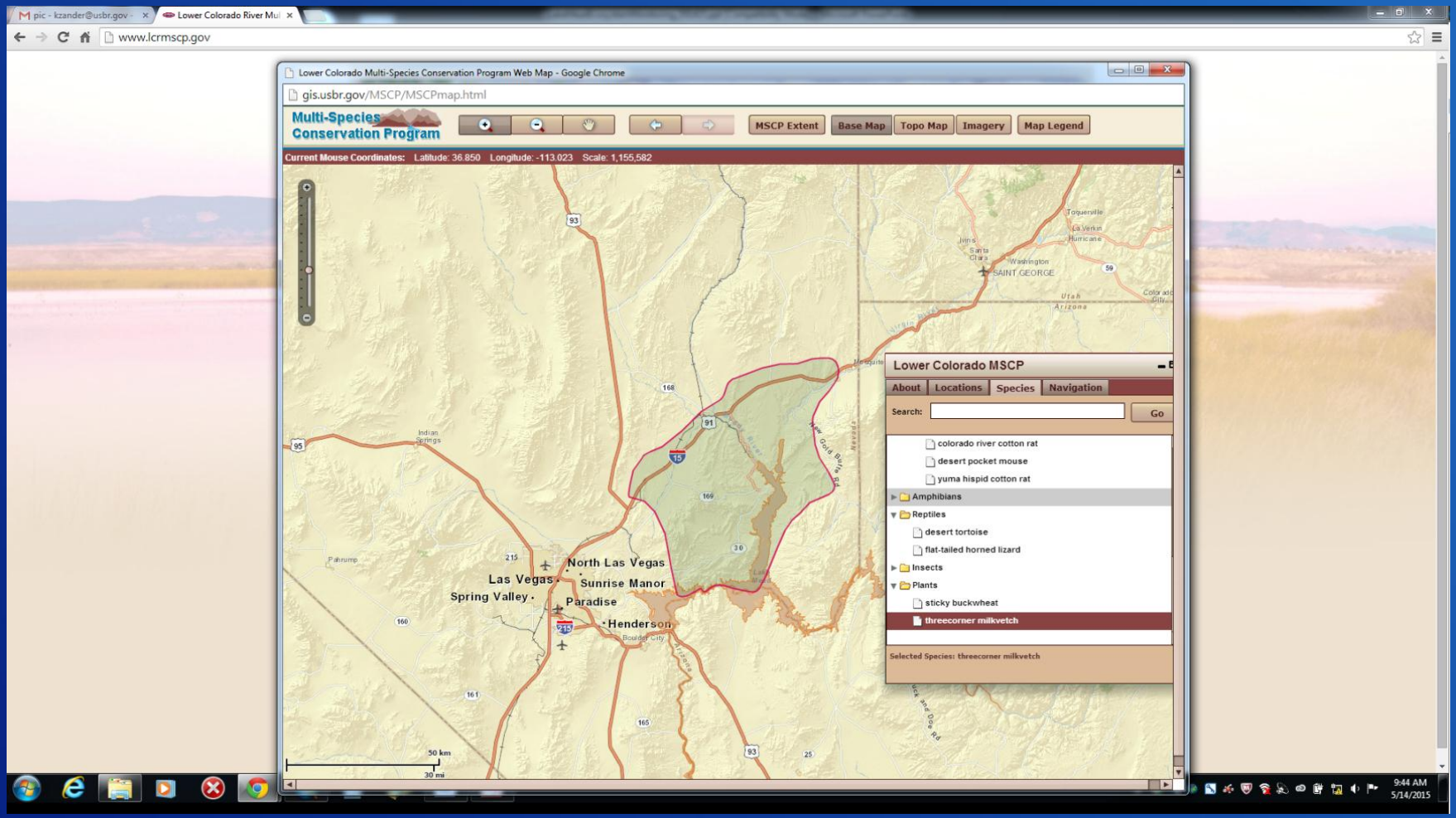
Multi Species Conservation Plan



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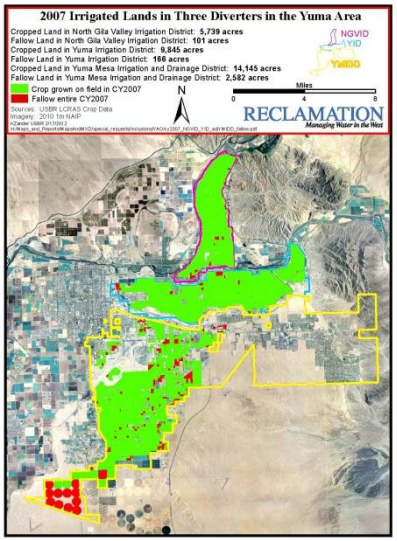
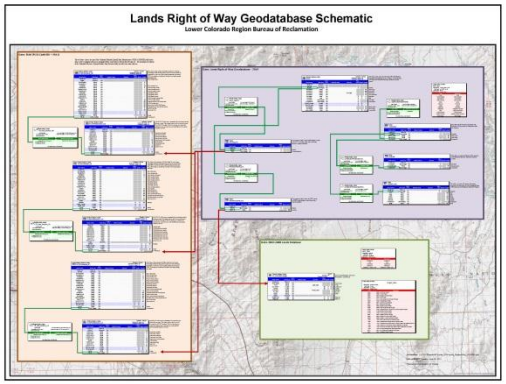
Data GIS creates and maintains

- Lands
  - Realty, contracts, recreation
- Archeological
- Biological
- Facilities
- Agricultural
- Imagery
- Water resources
  - Delivery, consumptive uses and losses, capacity, accounting

Products

- Maps
- Database design
- Analysis
  - Remote sensing, Image and geographic
- Contract oversight
- GIS and GPS support





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Lake Mead Bathymetry

- **Purpose of Study:**
  - **To determine the amount and location of sediment that has collected in Lake Mead since 1935.**
  - **Compare quantities of sediment from 2001 study and 1963 – 1964 study.**

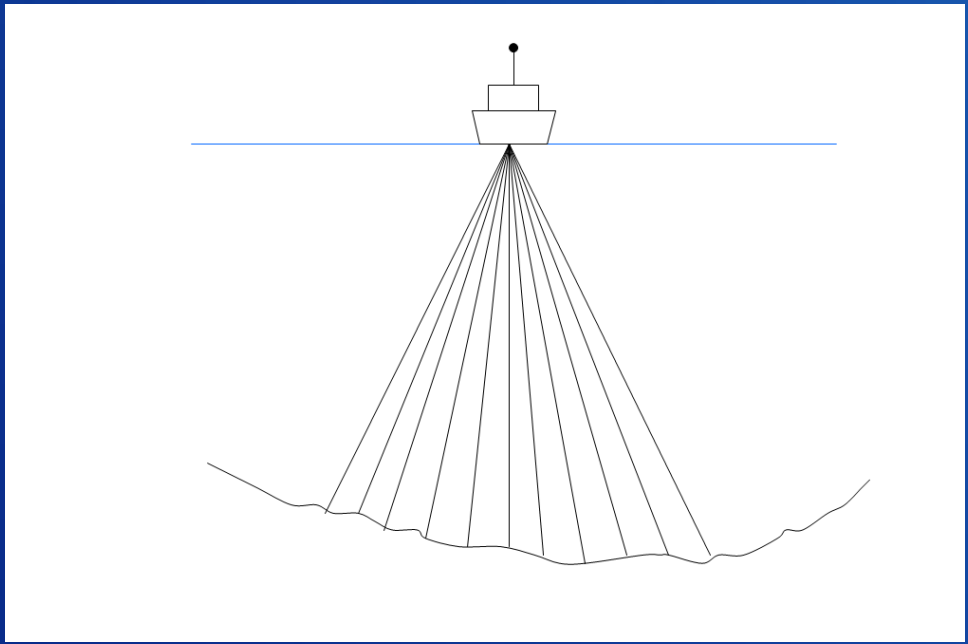
- **Background**
  - **1935 - Closure of Hoover Dam**
  - **1948 thru 1949 – First Sediment Study of Lake Mead**
  - **1963 thru 1964 – Second Sediment Study of Lake Mead (conducted after the closure of Glen Canyon Dam).**

Lake Mead Bathymetry

- Pre-impoundment contours and data from the 1963-1964 study were used to determine original bottom surface of Lake Mead.
- Completed using multi-beam mapping system in deep areas of lake, and single-beam mapping in the shallow areas.
  - Multi-beam is good for collecting x, y, z coordinates for depths ranging from 3 meters (9 feet) to 150 meters (490 feet).

Lake Mead Bathymetry

- **Multi-beam system capable of sending out 80 beams giving coverage of 120 degrees below the boat.**



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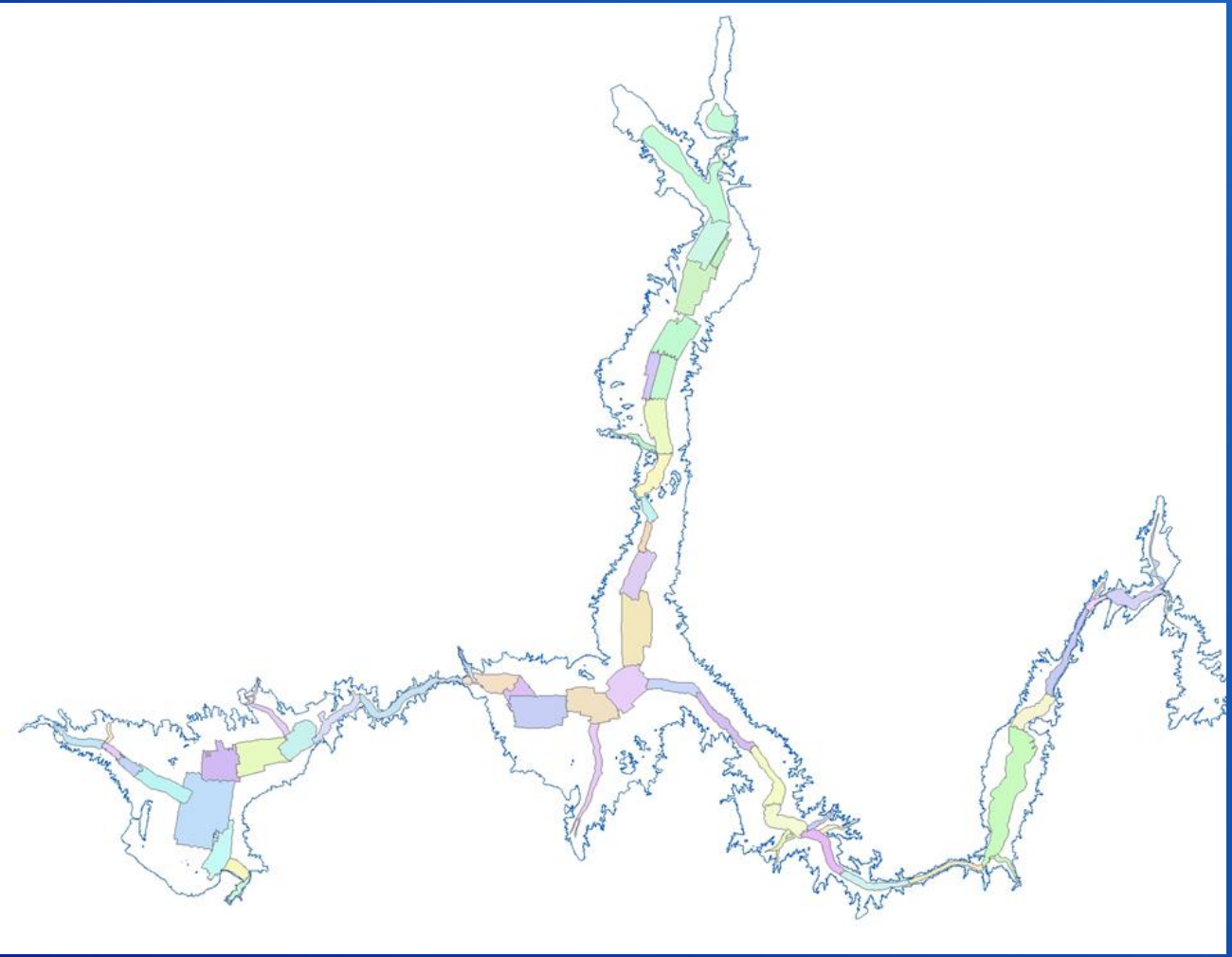
Lake Mead Bathymetry

- **Data Collection**
  - **Our goal for data collection was to collect data in the original river channel from Hoover Dam as far up river as we could navigate. (It is hypothesized that sediment will collect primarily along the original river channel). We also collected data from the major tributaries and washes.**
  - **Our 53 data sets consist of over 20 million points that cover about 30 percent of Lake Mead up to Pearce Ferry. Data processed to 5 meter grids.**

Lake Mead Bathymetry



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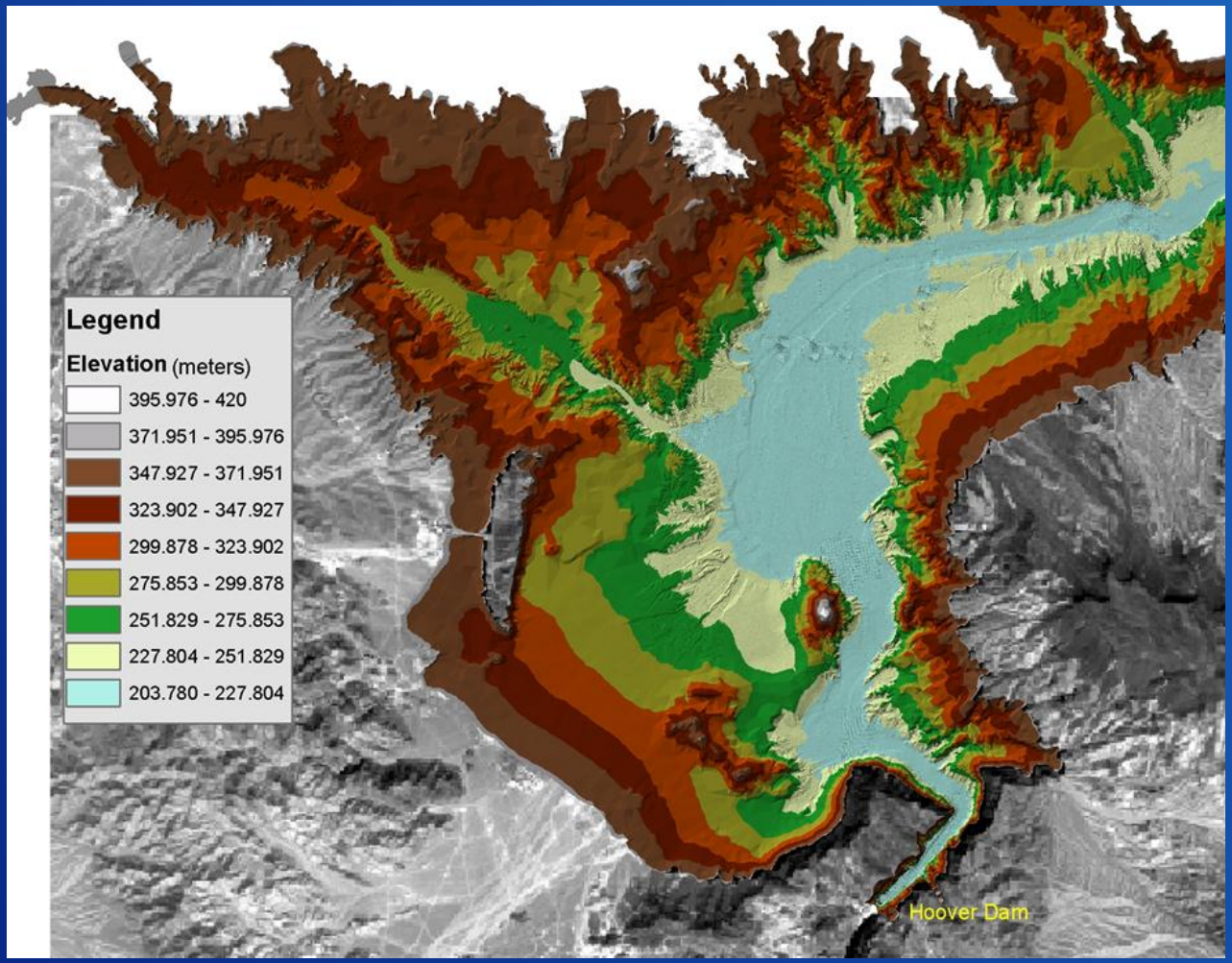
Lake Mead Bathymetry



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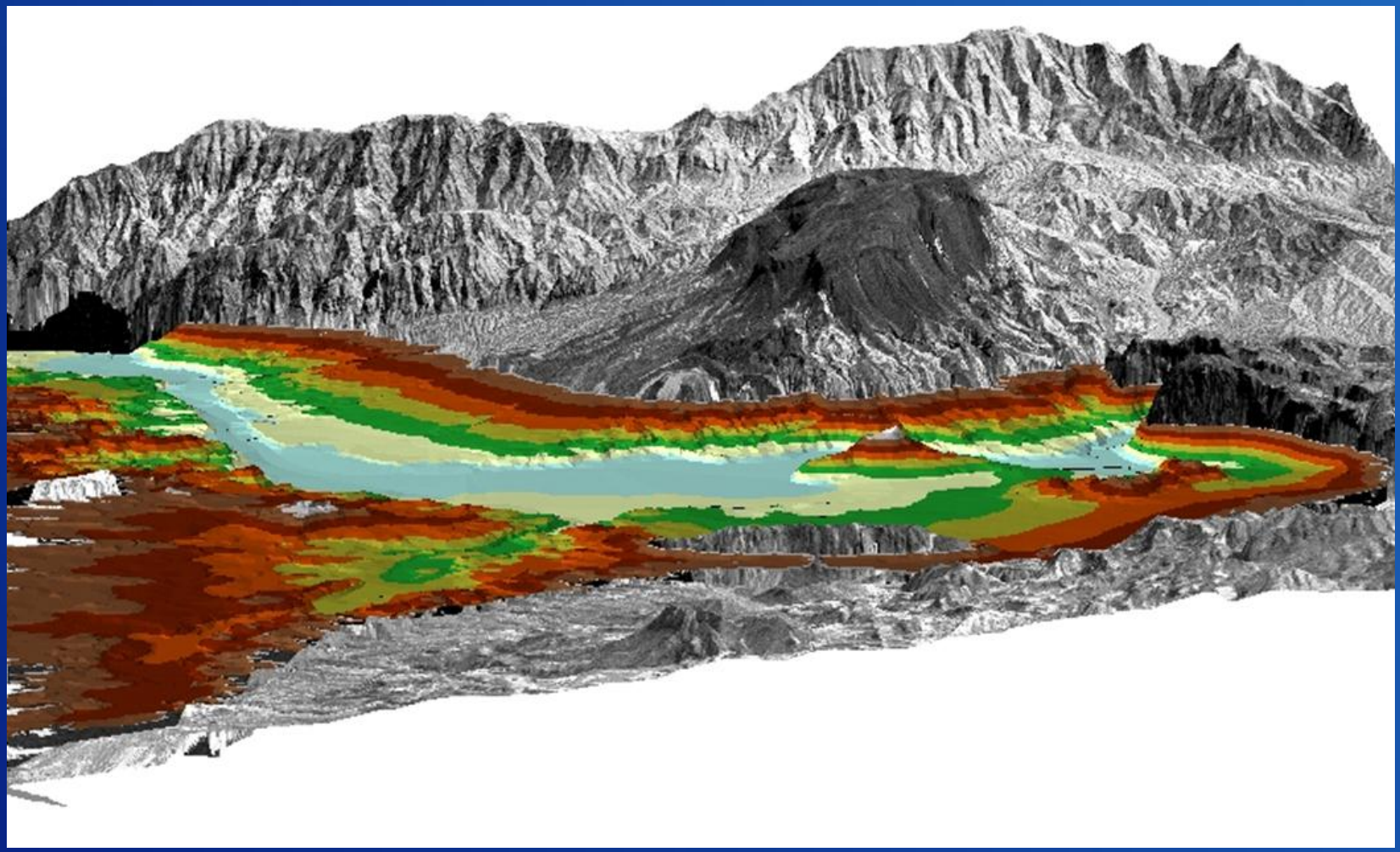
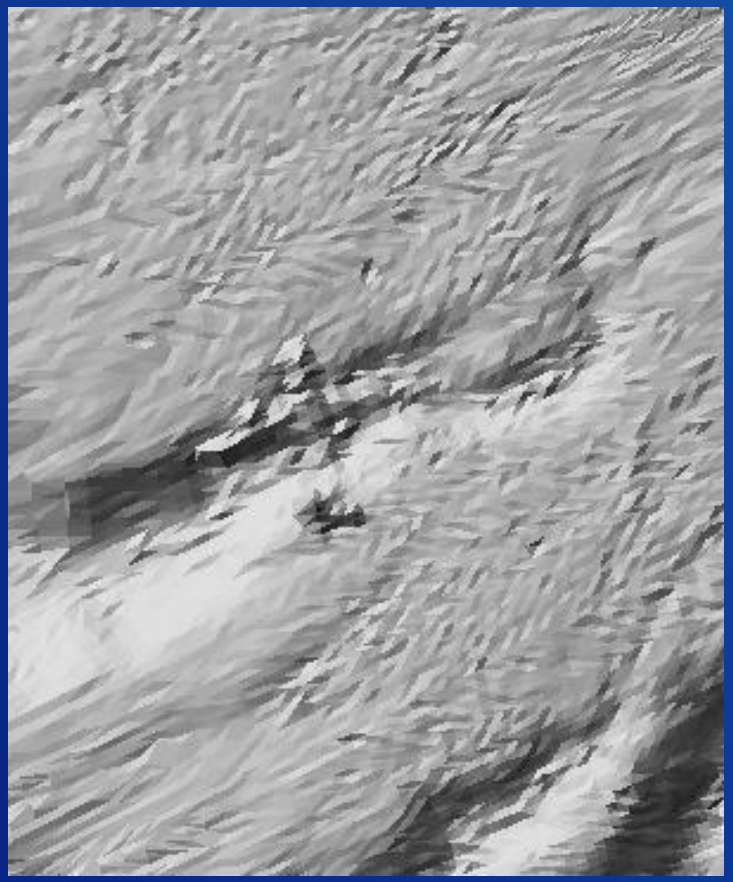
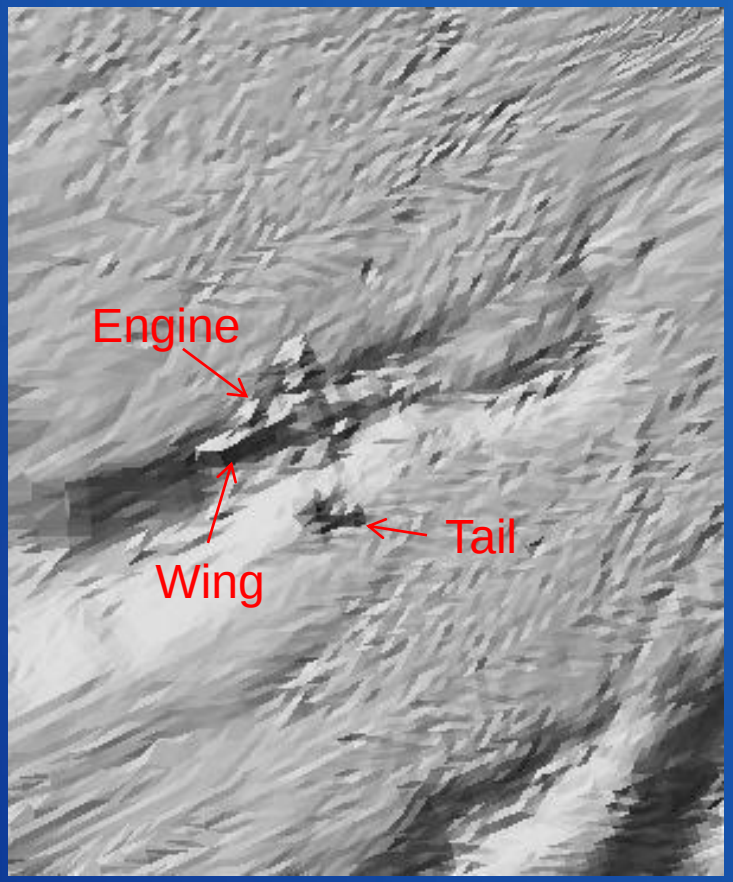
Lake Mead Bathymetry



Lake Mead Bathymetry

- **B-29 Found using unfiltered data sets**





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Lake Mead LiDAR

- **Fly LIDAR for the exposed shoreline of Lake Mead – up to Elevation 1220 ft. (lake elevation at time of flight was 1096.1 ft.).**

- **Deliverables received from project:**
  - **High-resolution aerial photos of Lake Mead**
  - **Contours at one foot intervals**
  - **1 Meter Grids (a point on the ground on grid spacing of 1 meter – 3.28 feet)**
  - **3 Meter Grids**

Lake Mead LiDAR

Sample Imagery

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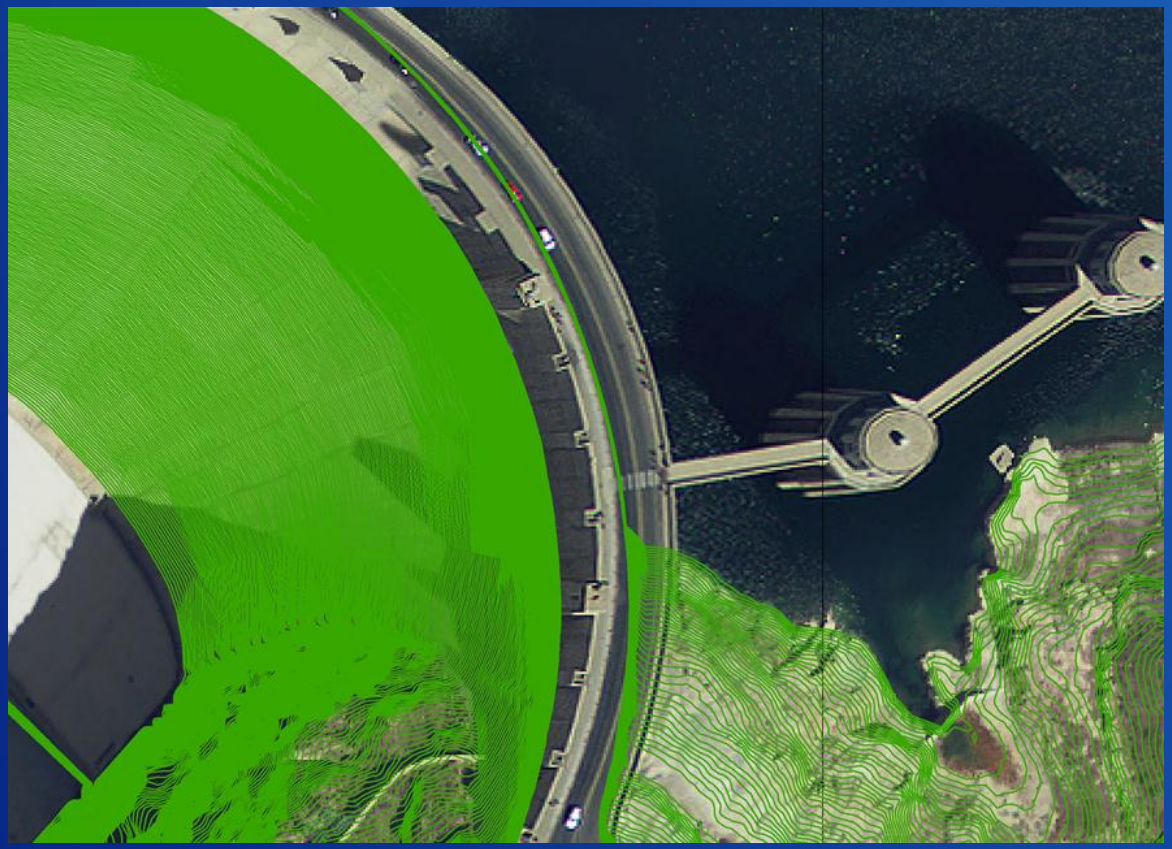
Lake Mead LiDAR

Sample 1’ Contours



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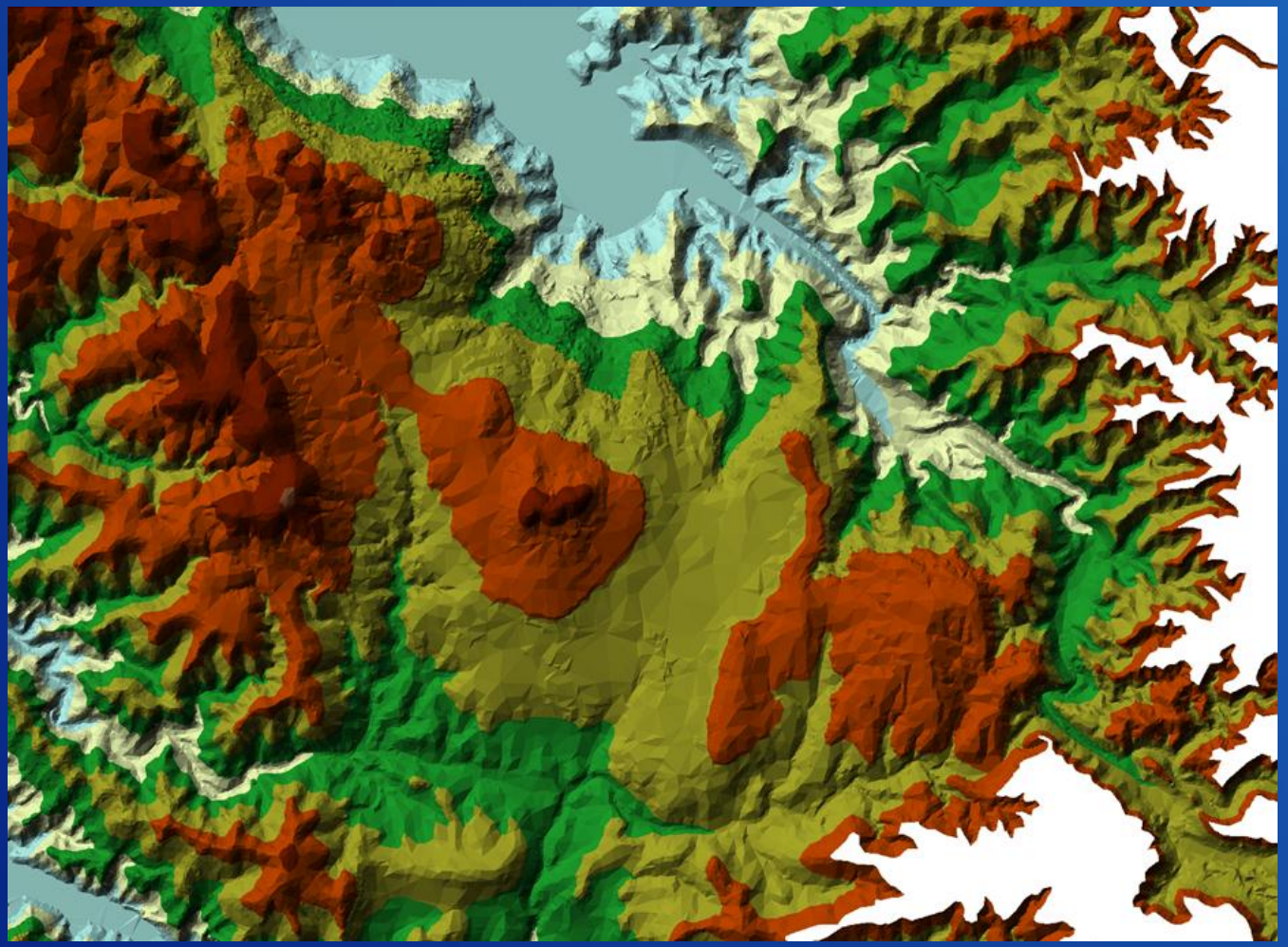
Lake Mead LiDAR



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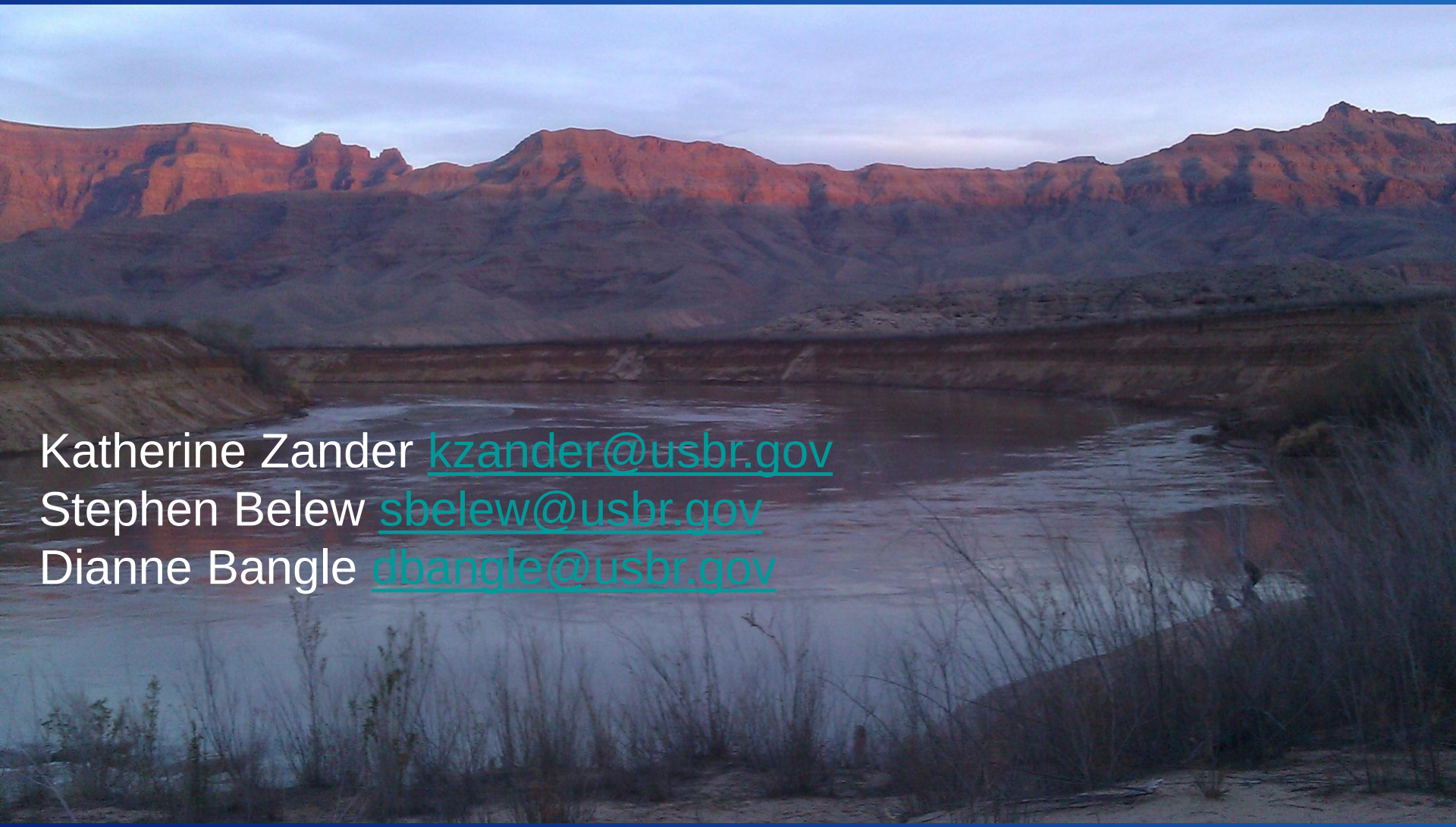
Lake Mead Area / Volume Tables

Data from both the LiDAR and Bathymetry projects were combined to determine new area – volume tables for Lake Mead.

Questions?



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